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On the Madreporaria of the Mergui Archipelago collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson, F.R.S., Superintendent of the Museum. By Prof. P. MARTIN DUNCAN, M.B. (Lond.), F.R.S., F.L.S.

[Read 18th March, 1886.]

(PLATE I.)

CONTENTS:—Introduction. List of Genera and Species found. List of new Species. Description of the new Species. Remarks; and the Affinities of the Coral-fauna of Mergui. Description of Plate.

Introduction.

THE Madreporaria which are classified and in part described in this communication were personally collected by Dr. Anderson in the Mergui Archipelago off the coast of Tenasserim. The collection is very interesting on account of the numerous species which it contains and of their alliances with the forms of the Coral-faunas of the Red Sea, of Ceylon, of the Eastern Archipelago, and of the Central-American coast. The facies of the large collection of 84 determinable species is stamped and characterized by the presence of numerous encrusting species, and by the evidence that even some of the species of the reef-building genus *Madrepora* appear to have grown under unfavourable conditions. Encrusting species of genera, hitherto known as freely growing, occur, and many species which are recognized without difficulty in more

vigorously growing faunas, are represented at Mergui by varieties which have given me much trouble in their classification. This difficulty was intensified on account of the predominance in the fauna of such large and therefore very variable genera as *Mussa*, *Mæandrina* (*Cœloria*), *Symphyllia*, *Favia*, and *Goniastræa*.

Several species which were described by MM. Milne-Edwards and Jules Haime, the habitats of which were not known to them, are recognized at Mergui.

The following is the list of genera and species constituting the fauna.

List of Genera and Species.

MADREPORARIA APOROSA.

Family TURBINOLIDÆ.

1. *Paracyathus Andersoni*, sp. nov.
2. — *profundus*, sp. nov.
3. — *indicus*, sp. nov.
4. — *cæruleus*, sp. nov.
5. — *merguiensis*, sp. nov.
6. *Polycyathus Verrilli*, sp. nov.
7. — *difficilis*, sp. nov.

Family POCILLOPORIDÆ, *Dunc.*

8. *Pocillopora cæspitosa*, *Dana*.
9. — *favosa*, *Ehr.*

Family ASTRÆIDÆ.

10. *Mussa cristata*, *Esper*, sp.
11. — *flexuosa*, *Ed. & H.*
12. — *corymbosa*, *Forskål*, sp.
13. *Euphyllia striata*, *Ed. & H.*, sp.
14. — *rugosa*, *Dana*.
15. — *plicata*, *Ed. & H.*
16. *Mæandrina* (*Cœloria*) *dædalea*, *Solander*, sp.
17. — (C.) *Esperi*, *Ed. & H.*, sp.
18. — (C.) *astræiformis*, *Ed. & H.*, sp.
19. — (C.) *labyrinthiformis*, *Linn.*, sp.
20. *Brachymæandrina pachychila*, *Ehr.*, sp.
21. *Symphyllia grandis*, *Ed. & H.*
22. — *recta*, *Dana*, sp.
23. — (*Isophyllia*) *erythræa*, *Klunz.*, sp.
24. *Hydnophora microcona*, *Lmk.*, sp.
25. *Tridacophyllia lactuca*, *Pallas*, sp.
26. *Favia Ehrenbergi*, *Klunz.*, var. *laticollis*, *Klunz.*
27. — *Okeni*, *Ed. & H.*
28. — *Rousseaui*, *Ed. & H.*, sp.

29. *Favia tubulifera*, *Klunz.*
30. — *cavernosa*, *Forskål*, sp.
31. — *Geoffroyi* (*Val.*), *Ed. & H.*
32. *Goniastræa favus*, *Forsk.*, sp., and variety.
33. — *retiformis*, *Lmk.*, sp.
34. — *Bournoni*, *Ed. & H.*
35. — *halicora*, *Hemp. & Ehr.*, sp., and variety.
36. — *incrustans*, sp. nov.
37. *Heliastræa* (*Ulastræa*) *crispata*, *Lmk.*, sp.
38. *Phymastræa irregularis*, *Dunc.*
39. — *aspera*, *Quelch.*
40. *Solenastræa* (*Quelchia*) *spongiformis*, sp. nov.
41. *Plesiastræa indurata*, *Verrill*, variety.
42. *Echinopora aspera*, *Solander*, sp.
43. *Leptastræa humilis*, sp. nov.
44. *Galaxea irregularis*, *Ed. & H.*, sp.
45. *Prionastræa abdita*, *Solander*, sp.
46. — *vasta*, *Klunz.*
47. — *robusta*, *Dana*, sp.
48. *Merulina ampliata*, *Solander*, sp.
49. — *ramosa*, *Ehr.*

MADREPORARIA FUNGIDA.

Family PLESIOFUNGIDÆ, *Dunc.*

50. *Siderastræa radians*, *Pallas*, sp., variety *pulchella*=*S. pulchella*, *Ed. & H.*

Family FUNGIDÆ.

51. *Fungia crassa*, *Dana*.
52. — *dentata*, *Dana*.
53. — *patella*, *Solander*, sp.
54. — *glans*, *Dana*?
55. — (*Haloglossa*) *echinata*, *Pallas*, sp.

56. *Halomitra* (*Podabacia*) *crustacea*, *Ed. & H.*
 57. *Cryptabacia* *talpina*, *Lmk.*, sp.
 58. *Herpolitha* *limax*, *Esper*, sp.

Family LOPHOSERIDÆ.

59. *Lophoseris* *cristata*, *Solander*, sp.
 60. — *cactus*, *Hemp. & Ehr.*, sp.
 61. *Pachyseris* *speciosa*, *Dana*, sp.
 62. *Coscinaræa* *mæandrina*, *Ehr.*, sp.
 63. — *monile*, *Forskål*, sp.

Family PLESIOPORITIDÆ, *Dunc.*

64. *Mæandroseris* *Bottæ*, *Rouss.*

MADREPORARIA PERFORATA.

Family EUPSAMMIDÆ.

65. *Balanophyllia* *merguiensis*,
 sp. nov.
 66. *Dendrophyllia* *coarctata*, sp.
 nov.
 67. — (*Cænopsammia*) *affinis*,
 sp. nov.
 68. *Astropsammia* *Pedersoni*, *Verrill.*

Family MADREPORIDÆ.

69. *Madrepora* *gracilis*, *Ed. & H.*
 70. — *valida*, *Dana.*
 71. — *surculosa*, *Dana.*
 72. — *hebes*, *Dana.*
 73. — *pyramidalis*, *Klunz.*
 74. — *paxilligera*, *Dana.*
 75. — *cribripora*, *Dana.*
 76. — *spicifera*, *Dana.*
 77. *Turbinaria* *cinerascens*, *Solan-*
der, sp.
 78. — *crater*, *Pallas*, sp.

Family PORITIDÆ.

79. *Porites* *conglomerata*, *Quoy &*
Gaim., variety.
 80. — *nodifera*, *Klunz.*
 81. — *excavata*, *Verrill.*
 82. *Synaræa* *lutea*, *Verrill.*
 83. *Goniopora* *columna*, *Dana.*
 84. — *lobata*, *Ed. & H.*

Indeterminable Species of the Genera:—

Heliastrea.
Aphrastræa.

Astræopora.
Fungia.

New Species:—

- Paracyathus* *Andersoni*. (Plate I. figs. 1-3.)
 — *profundus*. (Plate I. figs. 4-6.)
 — *indicus*. (Plate I. figs. 7-9.)
 — *cæruleus*. (Plate I. figs. 10, 11.)
 — *merguiensis*. (Plate I. figs. 12-14.)
Polycyathus *Verrilli*. (Plate I. figs. 15, 16.)
 — *difficilis*. (Plate I. figs. 17, 18.)
Goniastrea *incrustans*. (Plate I. figs. 19, 20.)
Solenastrea (*Quelchia*) *spongiformis*. (Plate I. figs. 21, 22.)
Leptastrea *humilis*. (Plate I. figs. 23, 24.)
Balanophyllia *merguiensis*. (Plate I. figs. 25, 26.)
Dendrophyllia *coarctata*. (Plate I. figs. 27, 28.)
 — (*Cænopsammia*) *affinis*. (Plate I. figs. 29, 30.)

Description of the new Species.

Section MADREPORARIA APOROSA, *Ed. & H.*Family TURBINOLIDÆ, *Ed. & H.*Genus PARACYATHUS, *Ed. & H.*

PARACYATHUS ANDERSONI, sp. nov. (Plate I. figs. 1-3.)

The corallum is short, has a slightly compressed, broad base,

above which there is some constriction, and a compressed elliptical calice. The calice is deep, broad at the margin, where the longer axis is on a slightly lower plane than the shorter. The septa are in nearly complete five cycles, slightly and unequally exsert, unequal in breadth, close, projecting outwards slightly at the margin, and only the primaries and secondaries projecting much into the calice. First three cycles nearly equal in size; the septa of the fourth cycle of a half-system unite with the tertiary, and the highest orders may unite with the fourth and fifth higher up in the calice. All are sharply spinulose at the sides, and the larger septa have plain and lobed margins, the others being crenulated. The pali of the primaries and secondaries are bilobed, rounded, and the upper lobe is large; those of the tertiaries and combined orders are smaller, much subdivided, and stout. The columella is small, deeply seated, concave, papillose, and the outer processes resemble the small pali. Costæ subequal, broad, low, large in relation to the smaller septa, and minutely granulated; some project near the calice.

Height 12·5 millim.; breadth of calice 10 millim., length 14 millim. The septa are coloured brown. Locality, Mergui Archipelago.

PARACYATHUS PROFUNDUS, sp. nov. (Plate I. figs. 4-6.)

The corallum is short with a broad adherent base, above which there is a slight constriction, very slightly compressed at the sides, and the calice equal to the base in diameter. Calice elliptical, deep and open; marginal planes on the same level. Septa unequal, very crowded, in incomplete five cycles, very slightly exsert and not projecting much into the calice. The fourth and fifth orders unite with the tertiaries near the columella, and all are spinulose at the sides, and the larger are lobed. Pali of the larger septa trilobed and large, and those of the tertiaries are stout, numerous, and crenulated. Columella deep, concave; papillæ numerous and ragged and united at their bases. Costæ subequal, large, broad, granular, and with marked grooves between them near the calice and less so lower down.

Height 7 millim.; length of calice 11 millim., breadth of calice 10 millim. The dry corallum has the septa, pali, and columella of a brown colour, the rest being white. Locality, Mergui Archipelago.

PARACYATHUS INDICUS, sp. nov. (Plate I. figs. 7-9.)

The corallum is short, has a very expanded base with a considerable constriction above it: an elliptical calice, the long diameter of which is on a lower plane than the shorter and as long as the base is broad. Calice elliptical, deep, margin curved upwards at the sides, and a slight downward curve at the extremities. Septa numerous, unequal, in five cycles, all exsert at the margin, and most of them overhanging slightly. The fourth and fifth orders unite with the tertiaries not far from the columella, and the highest orders unite with the fourth and fifth not far from the margin. The edges of the primaries and secondaries are thin and boldly curved convexity towards the fossa, the tertiaries are less bowed, and the other orders have straighter or slightly wavy edges; but all are boldly crenulated with paliform edges. The sides of the septa are spinulose. Pali small and in one lobe before the primaries and secondaries, and resembling an outer papilla of the columella before the tertiaries. The columella is deep, elongate, concave, and consists of many processes united and resembling the smaller pali. The costæ are small, nearly equal, rounded, barely projecting, and sparsely and minutely granular.

Length of calice 14 millim., breadth 10 millim., height 12 millim. The primaries and secondaries are exsert to the height of 2 millim. Locality, Mergui Archipelago.

PARACYATHUS CÆRULEUS, sp. nov. (Plate I. figs. 10-11.)

The corallum is low with a broad base, a much constricted stem, and a large shallow elliptical calice with a slightly everted margin, and with marginal axes nearly in the same plane. Septa in incomplete five cycles, very unequal, the primaries, secondaries, and tertiaries being exsert; none project much into the widely open calice. The sides of the septa are roughly and largely papillose. The pali are variable in number, those before the first orders are double, one high and narrow and rounded, the other small or absent. The pali before the combined higher orders are usually in multiple series. Columella very large, concave, processes numerous and united, the outer not to be distinguished from pali. Costæ low, subequal, narrow, and distinctly granular.

Height of corallum 8 millim.; length of calice 12 millim., breadth 9 millim. The colour of the septa, columella, and pali is blue; the costæ usually dull white, some are brown. Locality, Mergui Archipelago.

PARACYATHUS MERGUIENSIS, sp. nov. (Plate I. figs. 12-14.)

The corallum has a broad expanded base and a narrower calice, the stem constricted, otherwise cylindrical, and taller than broad. The calice is elliptical, very deep, and the columella is small, concave, with small and crowded processes. The septa are in five incomplete cycles, slightly exsert, unequal, crowded, and projecting into the calice; spinulose at the sides. The pali are single, and often tall, before the secondaries and primaries, and are small and nodular; those before the tertiaries are numerous and tall, and some are like twisted open lamellæ. The costæ are large, subequal, broad, and marked with granules.

Height of corallum 8.5 millim., breadth of calice 6.5 millim., length of calice 8 millim. The septa, pali, and columella are of an intense Prussian-blue colour. Locality, Mergui Archipelago.

Subfamily TURBINOLIDÆ REPTANTES, *Dunc.* (*Revision of Genera &c.*, *Journ. Linn. Soc., Zool.* vol. xviii. p. 34).

Genus POLYCYATHUS, *Dunc. op. cit.* p. 34.

POLYCYATHUS VERRILLI, sp. nov. (Plate I. figs. 15, 16.)

The colony covers about 10 square inches, the corallites are variously spaced, rarely very close, small, cylindrical, short, and their costæ pass over the basal structure, which is minutely granular. The calices are widely open, circular, or slightly wavy in marginal outline. Septa slightly exsert, unequal, sharply granular at the sides, extending like a circular *zone* inwards, and surrounding the narrow, deep, circular fossa; rarely with four cycles, usually with three and a few of the fourth order, or only three cycles. Costæ faint on some corallites, well seen on others, much broader relatively than the septa, low, nearly equal, but those of the primaries and secondaries may project near to the margin; they traverse much or all the space between the corallites, or they may not pass far. Epitheca pellicular and granular. There are pali before all septa except those of the last cycle, or they may exist before all the septa in some calices with three cycles of septa; broadest before the secondaries. The pali reach well into the "*zone*" of septa. Columella small, deep, concave, papillose.

Height of ordinary corallites 2-2.5 to 3 millim., width of calice 2 to 2.5 millim.; distance between corallites 2 to 4 millim. Locality, Mergui Archipelago, encrusting.

POLYCYATHUS DIFFICILIS, sp. nov. (Plate I. figs. 17, 18.)

The colony covers considerable space and encrusts; the corallites are short, cylindrical, crowded in places, distant in others, broadest at the calice. Calice circular in outline. Septa in three cycles, the tertiaries uniting with the secondaries; the primaries are the larger and are slightly exsert, and all are granular at the sides; they are unequal in size, and project into the calice, and have trifid spinules on the edges. Columella small, concave, and formed by little processes united at their bases. Pali small and short, often indistinct, small before the primaries and larger before the secondaries and nearer the calicular edge. The costæ are large, broad, subequal, and reach over the basal structure more or less, distinct, close, and sometimes curved or bent suddenly, much broader than the septa. A granular epitheca. Much of the basal structure is non-costulate, but is granular.

Height of corallites 2-3 millim., breadth of calices 2-3 millim.
Locality, Mergui Archipelago.

Family POCILLOPORIDÆ, Dunc. (Rev. p. 46).

Genus POCILLOPORA, Lmk., pars.

POCILLOPORA CÆSPITOSA.

Pocillopora cæspitosa, Dana, *U. S. Expl. Exped.*, *Zooph.* vol. vii. p. 525, pl. 49. figs. 5, 5 a, 1846.

Locality, King Island Bay.

POCILLOPORA FAVOSA.

Pocillopora favosa, Ehrenberg, *Abhandl. d. Akad. Berl.* (1832) p. 351 1834.

Locality, Sullivan Island.

Family ASTRÆIDÆ.

Genus MUSSA, Oken.

MUSSA CRISTATA.

Madrepora cristata?, Esper, *Pflanz.* t. i. p. 150, *Madr.* p. 226, 1791.

Mussa cristata, Ed. & H. *Hist. Nat. des Corall.* t. ii. p. 335, 1857.

Locality, Elphinstone Island, below low-water mark.

MUSSA FLEXUOSA.

Mussa flexuosa, Ed. & H. *Ann. des Sc. Nat.* 3 sér. t. xi. p. 252, 1849.

Locality, King Island Bay.

MUSSA CORYMBOSA.

Madrepora corymbosa, *Forskâl, An. in terr. Orient.* p. 137, 1775.

Mussa corymbosa, *Dana, op. cit.* p. 177.

Locality, Elphinstone Island.

Genus EUPHYLLIA, *Ed. & H.*

EUPHYLLIA STRIATA.

Leptosmilia striata, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. x. p. 269, 1849.

Euphyllia striata, *Ed. & H. Hist. Nat. des Corall.* t. ii. p. 194, pl. D 2. fig. 1, 1857.

Locality, King Island Bay.

EUPHYLLIA RUGOSA.

Euphyllia rugosa, *Dana, op. cit.* p. 166.

Locality, King Island Bay.

EUPHYLLIA PLICATA.

Euphyllia plicata, *Ed. & H. op. cit.* p. 195.

Locality, King Island Bay.

Genus MÆANDRINA, *Ed. & H.*Subgenus CÆLORIA, (genus) *Ed. & H.*

MÆANDRINA (CÆLORIA) DÆDALEA.

Madrepora dædalea, *Ellis & Solander, Hist. of Zooph.* p. 163, pl. 46. figs. 1 & 2, 1786.

Cæloria dædalea, *Ed. & H. Pol. foss. des terr. paléoz. etc.* p. 93, 1831.

Locality, Mergui Archipelago.

MÆANDRINA (CÆLORIA) ESPERI.

Astoria Esperii, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xi. p. 298, 1849.

Cæloria Esperii, *Ed. & H. Hist. Nat. des Corall.* t. ii. p. 417.

Locality, Mergui Archipelago.

MÆANDRINA (CÆLORIA) ASTRÆIFORMIS.

Astoria astræiformis, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xi. p. 299, 1849.

Cæloria astræiformis, *Ed. & H. Hist. Nat. des Corall.* t. ii. p. 417, 1857.

Locality, King Island Bay.

MÆANDRINA (CÆLORIA) LABYRINTHIFORMIS.

Madrepora labyrinthiformis (pars), *Linn. Syst. Nat.* ed. x. p. 194, 1758.

Cæloria labyrinthiformis, *Ed. & H. op. cit.* t. ii. p. 412, 1857.

Locality, Sullivan Island.

Genus BRACHYMÆANDRINA, *Dunc. op. cit.* p. 90.

BRACHYMÆANDRINA PACHYCHILA.

Platygyra labyrinthica, var. *pachychila*, *Ehrenb. Abhand. Akad. zu Berlin*, 1832, p. 323, 1834.

Cœloria pachychila, *Klunz. Korallth. des Rothen Meeres*, Bd. iii. p. 15, Taf. i. fig. 6, 1879.

Locality, Mergui Archipelago.

Genus SYMPHYLLIA, *Ed. & H.*

SYMPHYLLIA GRANDIS.

Symphyllia grandis, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xi. p. 255, 1849.

Locality, Mergui Archipelago.

SYMPHYLLIA RECTA.

Mussa recta, *Dana, Zooph.* p. 186, pl. 8. fig. 11, 1846.

Locality, Mergui Archipelago.

SYMPHYLLIA (ISOPHYLLIA) ERYTHRÆA.

Isophyllia erythræa, *Klunz. op. cit.* p. 10, Taf. i. fig. 10, & Taf. ix. fig. 9.

Locality, Mergui Archipelago.

Genus HYDNOPHORA, *Ed. & H.*

HYDNOPHORA MICROCONA.

Monticularia microconus, *Lamarck, Hist. Anim. s. Vert.* t. ii. p. 251, 1816; 2 édit. p. 293.

Hydnophora microconus, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xi. p. 302, 1849.

Locality, Sullivan Island.

Genus TRIDACOPHYLLIA, *Blainv.*

TRIDACOPHYLLIA LACTUCA.

Madrepora lactuca, *Pallas, Elench. Zooph.* p. 281, 1766.

Tridacophyllia lactuca, *Dana, op. cit.* p. 195.

Locality, King Island Bay.

Genus FAVIA, *Oken.*

FAVIA EHRENBERGI, var. LATICOLLIS.

Favia Ehrenbergi, var. *laticollis*, *Klunz. op. cit.* p. 29, Taf. iii. fig. 7.

Locality, Sullivan Island.

FAVIA OKENI.

Favia Okeni, *Ed. & H. Hist. Nat. des Corall.* t. ii. p. 430, 1857.

Locality, King Island Bay.

FAVIA ROUSSEAUÏ.

Parastræa Rousseauï, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xii. p. 168, 1850.

Favia Rousseauï, *Ed. & H. Hist. Nat. des Corall.* t. ii. p. 429, 1857.

Locality, Mergui Archipelago.

FAVIA TUBULIFERA.

Favia tubulifera, *Klunz. op. cit.* p. 28, Taf. iii. fig. 6, & Taf. x. fig. 2.

Locality, King Island Bay.

FAVIA CAVERNOSA.

Madrepora cavernosa, *Forskâl, Desc. Anim. &c. quæ in terr. orient. observ.* p. 132, 1775.

Locality, King Island Bay.

FAVIA GEOFFROYÏ.

Favia Geoffroyï, *Val. MS., in Ed. & H. op. cit.* t. ii. p. 433, 1857.

Locality, King Island Bay.

Genus GONIASTRÆA, *Ed. & H.*

GONIASTRÆA FAVUS.

Madrepora favus, *Forskâl, op. cit.* p. 132, 1775.

Goniastræa favus, *Klunz. op. cit.* pt. iii. p. 35, Taf. iv. fig. 4, & Taf. x. fig. 7.

Locality, Mergui Archipelago.

A variety.

Locality, Mergui Archipelago.

GONIASTRÆA RETIFORMIS.

Astræa retiformis, *Lamk. Hist. Anim. s. Vert.* t. ii. p. 265, 1816; 2 édit. p. 415.

Goniastræa retiformis, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xii. p. 161, 1850; *Klunz. op. cit.* pt. iii. p. 36, Taf. iv. fig. 5.

Locality, Mergui Archipelago.

GONIASTRÆA BOURNONI.

Goniastræa Bournoni *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xii. p. 162, 1850.

Locality, Mergui Archipelago.

GONIASTRÆA HALICORA.

Astræa halicora, *Hemp. & Ehr. Abhandl. Akad. Berl.* 1832, p. 321.

Prionastræa halicora, *Ed. & H. Hist. Nat. des Corall.* t. ii. p. 517.

Goniastræa halicora, *Klunz. op. cit.* pt. iii. p. 33, Taf. iv. fig. 1, & Taf. x. fig. 3 a & b.

Locality, King Island Bay.

A variety.

Locality, King Island Bay.

GONIASTRÆA INCRUSTANS, sp. nov. (Plate I. figs. 19, 20.)

The colony is large, swollen and gibbous above, and has a thin edge, where an epitheca of a basal nature is seen. Encrusting old corals and parts of dead individuals of the same species. Calices very variable in shape and size, generally irregularly hexagonal, often elongate, and some are more simple than hexagonal, with a large crown of pali. Shallow as a rule, but many are deep; united to the neighbouring corallites by sharp ridges at the surface or by decidedly broad ones; in some parts there is a delicate line or furrow on the broad ridge over which the septa do not pass. Septa extremely variable in number, but the complete fifth cycle is not present. The distinction between the cycles is not possible, and the long and larger are separated by smaller and shorter septa; hence the arrangement is alternate, and this is found in small calices as well as in large. The septa are rather crowded, alternately large and small, and project but slightly from the wall, are straight, and sharply and minutely granular at the free edge. The pali form a very large crown, and encircle a deep and small columellary space; they are before nearly all the longer septa, and are often broader and higher than the septal ends, and are boldly arched and minutely granular. As the septal number of neighbouring calices is never the same, so the size of the crown of pali varies greatly. In some large calices where there are forty-eight septa the pali are before the large twenty-four septa, and then it may occur that those opposite the tertiaries are smaller than the others and bend towards them. But this arrangement does not always occur. Size of the calices has not everything to do with the dimensions of the crown of pali, for neighbouring calices exist of the same size, and in one there are not so many septa as the size would appear to warrant and the pali are diminished in number. In some recently formed corallites the septa are slender and there are no pali; these occur near the margin of the

colony. Fissiparous division occurs, and it is evident that it is the usual method of increase, but gemmation from the basal epitheca seems to happen. Columella deeply seated and very small.

Length of the colony 24 centim., breadth 14; height of the encrusting mass less than 10 millim. Diameter of calices from 3 millim. with forty septa, 5 millim. of the same septal number, 8 millim. with fifty-six septa. Locality, Mergui Archipelago.

Genus HELIASTRÆA, *Ed. & H.*

Subgenus ULASTRÆA, *Ed. & H.*

HELIASTRÆA (ULASTRÆA) CRISPATA.

Astræa crispata, *Lamk. Hist. Anim. s. Vert. t. ii. p. 265, 1816; 2 édit. p. 416.*

Ulastræa crispata, *Ed. & H. Ann. des Sc. Nat. 3 sér. t. x. pl. 9. fig. 4, et t. xii. p. 116, 1850.*

Locality, Mergui Archipelago.

Genus PHYMASTRÆA, *Ed. & H.*

PHYMASTRÆA IRREGULARIS.

Phymastræa irregularis, *Dunc. Proc. Zool. Soc. 1883, p. 406.*

Locality, King Island Bay.

PHYMASTRÆA ASPERA.

Phymastræa aspera, *Quelch, Report on 'Challenger' Reef-building Corals, p. 105.*

Locality, King Island Bay.

Genus SOLENASTRÆA, *Ed. & H.*,

Amended, Dunc. Rev. Fam. & Gen. p. 107.

Subgenus QUELCHIA. Solenastræans sometimes increasing by fissiparity.

SOLENASTRÆA (QUELCHIA) SPONGIFORMIS, sp. nov. (Plate I. figs. 21, 22.)

The colony is tuberoso, taller than broad, more or less sub-cylindrical, rounded above and narrower at the attached base. Calices numerous, circular, and slightly raised at the margin, separated by varying amounts of cellular cœnenchyma, which is minutely and sharply spinulose, the spinules being short, slender, jagged, and with from one to four thorny endings. Calicular fossa deep and narrow. The septa are twenty in number, ten

large and ten very small, broadest at the margin and slender within, the larger exsert and the smaller very incised at the free inner edge, all granular at the sides. Costæ larger than the septa, and rarely extending far from the calicular margin. Columella small and deeply seated, composed of a few trabeculæ. Endotheca scanty. Gemmation frequent, and from the cœnenchyma, one part of a bud being close to a calice. Fissiparous calices occasional, large.

Height of colony 45 millim., breadth 30 millim.; breadth of calices 1.5 to 2 millim. Locality, Mergui Archipelago.

Genus PLESIATRÆA, *Ed. & H.*

PLESIATRÆA INDURATA.

Plesiastrea indurata, *Verrill, Proc. Essex Inst.* ser. 2, v. p. 36, 1867.

A variety.

Locality, King Island Bay.

Genus ECHINOPORA, *pars, Dana.*

ECHINOPORA ASPERA.

Madrepora aspera, *Ellis & Solander, Hist. of Zooph.* p. 156, pl. 39, 1786.

Echinopora aspera, *Dana, U.S. Expl. Exped., Zooph.*, vol. vii. p. 281, 1846.

Locality, King Island Bay.

Genus LEPTATRÆA, *Ed. & H.*

LEPTATRÆA HUMILIS, sp. nov. (Plate I. figs. 23, 24.)

The colony is low, gibbous and encrusting, covering a considerable surface. The corallites are small and short, close, closely united near the base by the fused walls, but separate slightly above, so that the margins of the calices are close but not joined, there not being any costæ in the interval. Calices variable in size and shape, rarely circular, widely open, and having a narrow and deep fossa. Septa in three cycles, with orders of the fourth; primaries the largest, entire above and dentated within; secondaries decidedly less exsert than the primaries; the septa of the fourth and fifth orders small. Columella deeply seated, very small. Endotheca well developed. Increase by gemmation from the marginal calices of the colony.

Height of corallites 9–10 millim., breadth of calices 2–4 millim. Locality, Mergui Archipelago.

Genus GALAXEA, *Oken*.

GALAXEA IRREGULARIS.

Sarcinula irregularis, *Ed. & H. Ann. des Sci. Nat.* 3 sér. t. x. p. 316, 1848.

Galaxea irregularis, *Ed. & H. Pal. foss. des terr. paléoz. &c.* p. 71, 1851.

Locality, Mergui Archipelago.

Genus PRIONASTRÆA, *Ed. & H.*

PRIONASTRÆA ABDITA.

Madrepora abdita, *Ellis & Solander, op. cit.* p. 319.

Prionastræa abdita, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xii. p. 128, 1850.

Localities, King Island Bay and Sullivan Island.

PRIONASTRÆA VASTA.

Prionastræa vasta, *Klunz. Korallth. des Rothen Meeres*, pt. iii. p. 38, Taf. iv. figs. 12 & 8 (var. *superficialis*), Taf. x. fig. 4 a & b (*Durchschnitte*).

Locality, King Island Bay.

PRIONASTRÆA ROBUSTA.

Astræa robusta, *Dana, op. cit.* p. 248, pl. 13, fig. 10.

Prionastræa robusta, *Ed. & H. Hist. Nat. des Corall.* t. ii. p. 525.

Locality, Mergui Archipelago.

Genus MERULINA, *Ehr.*

MERULINA AMPLIATA.

Madrepora ampliata, *Ellis & Solander, op. cit.* p. 157, pl. 41. figs. 1 & 2.

Merulina ampliata, *Ehr. Corall. des Roth. Meer.* p. 104, 1834.

Locality, Elphinstone Island.

MERULINA RAMOSA.

Merulina ramosa, *Ehr. in Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xv. p. 144, 1851.

Locality, Elphinstone Island.

Section MADREPORARIA FUNGIDA.

Family PLESIOFUNGIDÆ, *Dunc. Revision*, p. 133.

Genus SIDERASTRÆA, *Blainv.*

SIDERASTRÆA RADIANS.

Madrepora radians, *Pallas, Elench. Zooph.* p. 322, 1766.

Siderastræa galaxea, *Ed. & H. Ann. des Sc. Nat.* xii. p. 139, 1850.

Var. PULCHELLA.

Astræa pulchella, *Ed. & H. Hist. Nat. des Corall.* ii. p. 507.

Locality, Mergui Archipelago.

Family FUNGIDÆ.

Genus FUNGIA, *Dana*,

Amended, Dunc. Revis. p. 141.

FUNGIA CRASSA.

Fungia crassa, *Dana, op. cit.* p. 304, pl. 19. fig. 13.

Locality, Elphinstone Island.

FUNGIA DENTATA.

Fungia dentata, *Dana, op. cit.* p. 293, pl. 18. fig. 7.

Locality, Elphinstone Island.

FUNGIA PATELLA.

Madrepora patella, *Ellis & Solander, op. cit.* p. 148, tab. 28. figs. 1-4, 1786.

Fungia patella, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xv. p. 77, 1851.

Locality, Elphinstone Island.

FUNGIA GLANS.

Fungia glans, *Dana?*

Locality, Elphinstone Island.

Subgenus HALIGLOSSA, (gen.) *Ehr., Dunc. Revis.* p. 142.

FUNGIA (HALIGLOSSA) ECHINATA.

Madrepora echinata, *Pallas, Elench. Zooph.* p. 284, 1766.

Haliglossa echinata, *Klunz. op. cit.* pt. iii. p. 67.

Locality, Elphinstone Island.

Genus HALOMITRA, *Dana*,

Amended, Dunc. Journ. Linn. Soc., Zool. xiii. p. 155, 1883.

Subgenus PODABACIA.

HALOMITRA (PODABACIA) CRUSTACEA.

Podabacia crustacea, *Ed. & H. Hist. Nat. des Corall.* iii. p. 20, 1860.

Locality, Elphinstone Island.

Genus CRYPTABACIA, *Ed. & H.*

CRYPTABACIA TALPINA.

Fungia talpina, *Lamk. Hist. Anim. s. Vert.* p. 370.

Cryptabacia talpina, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xv. p. 95, 1851.

Locality, Elphinstone Island.

Genus *HERPOLITHA*, *Eschscholtz.*

HERPOLITHA LIMAX.

Madrepora limax, *Esper, Pflanz. t. i. Forts. 77, Madr. tab. lxxiii.*, 1797.
Herpetolitha limax, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xv. p. 94, 1851.

Locality, Elphinstone Island.

Family *LOPHOSERIDÆ*, *Dunc. Revis.* p. 146.

Genus *LOPHOSERIS*, *Ed. & H.*

LOPHOSERIS CRISTATA.

Madrepora cristata, *Ellis & Solander, op. cit.* p. 158, tab. xxxi. figs. 3-4, 1786.

Lophoseris cristata, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xv. p. 121, 1851.

Locality, Mergui Island.

LOPHOSERIS CACTUS.

Pavonia cactus, *Hemp. & Ehr. Abhandl. d. Akad. Berl.* (1832), p. 329, 1834.

Lophoseris cactus, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xv. p. 123, 1851.

Locality, King Island Bay.

Genus *PACHYSERIS*, *Ed. & H.*,
Amended, Dunc. Revis. p. 162.

PACHYSERIS SPECIOSA.

Agaricia speciosa, *Dana, U.S. Explor. Exped., Zooph.* p. 337, pl. 21, fig. 7, 1847.

Pachyseris speciosa, *Ed. & H. Ann. des Sc. Nat.* 3 sér. t. xv. p. 136, 1851.

Locality, Mergui Archipelago.

Genus *COSCINARÆA*, *Ed. & H.*,
Amended, Dunc. Revis. p. 184.

COSCINARÆA MÆANDRINA.

Astræa mæandrina, *Ehr. Abhandl. d. Akad. Berl.* 1832, p. 1834.

Coscinaræa mæandrina, *Ed. & H. Pal. foss. des terr. paléoz. &c.* p. 144, 1851.

Locality, Mergui Archipelago.

COSGINARÆA MONILE.

Madrepora monile, *Forskål, op. cit.* p. 133.

Coscinaræa monile, *Klunz. op. cit.* pt. iii. p. 79, Taf. ix. fig. 4, and Taf. x. fig. 17 a & b (*Durchschnitte*).

Locality, Mergui Archipelago.

Family PLESIOPORITIDÆ, *Dunc. Revis.* p. 165.

Genus MÆANDROSERIS (*pars*), *Rousseau*.

MÆANDROSERIS BOTTÆ.

Mæandroseris Bottæ, *Rousseau, Voy. au Pôle sud de Dumont d'Urville, Zool. t. v. p. 121, Zooph. pl. 28. fig. 1* (1854).

Locality, Mergui Archipelago.

Section MADREPORARIA PERFORATA, *Ed. & H.*

Family EUPSAMMIDÆ, *Dunc. Revis.* p. 172.

Genus BALANOPHYLLIA, *S. Wood*.

BALANOPHYLLIA MERGUIENSIS, sp. nov. (Plate I. figs. 25, 26.)

The corallum is small, short, rather higher than broad, nearly cylindrical, being slightly compressed. Calice elliptical and larger than the base, and deep. Septa numerous and crowded, in incomplete five cycles. Primaries and secondaries equal, thin, plain at the margin of the calice and with ragged edges elsewhere and near the columella. The tertiaries have a tall, stout, serrated swelling near the columella, joined by the higher orders. These large projections form as it were a paliferous crown around the columella, and this is deeply seated, long and narrow, and trabeculate. Costæ nearly equal, with a single row of short rounded granulations, often wavy, narrow, bifurcating, and not much projecting. Intercostal spaces minutely and regularly perforated. Epitheca rudimentary.

Height of corallum 8-9 millim. ; breadth of calice 5.5 millim., length 7 millim. Locality, Mergui Archipelago.

Genus DENDROPHYLLIA, *Ed. & H.*

DENDROPHYLLIA COARCTATA, sp. nov. (Plate I. figs. 27, 28.)

The colony is moderately tall, with a broad base, and consists of corallites of various sizes and of different ages ; parent corallite not usually detected. Some buds arise close to the base

and others nearer the calicular margins of the corallites. Corallites turbinate, compressed. Calices elliptical, often much compressed, longer than broad, with a moderately stout margin. Septa slightly exsert and projecting but slightly from the wall towards the axis of the calice, thin, imperforate except close to the wall, and with plain edges; the smaller with ragged edges and often with projections on them near the columella. There are four complete cycles, and part of a fifth may exist. In the large calices the fifth is nearly complete and the primaries and secondaries are equal; the tertiaries are slender and do not project much from the wall, but they become large near the columella on account of the junction of the higher orders with them. The septa of the fourth and fifth orders reach halfway down the corallite and join the tertiaries, and the small cribriform septa of the fifth cycle join the fourth and fifth orders not far from the calice. Or this last junction may not take place. Columella deep, small, elongate, formed of lax trabeculæ, and these join the principal septa. Wall stout, cribriform, perforated very regularly. Costæ variable, usually subequal, minutely granular, projecting slightly. The long and short axes of the margin of the calices are on different planes.

Height 38 millim.; breadth of free surface 20–25 millim., length of the free surface 35–45 millim.; length of calices 8–15 millim., breadth 8–12 millim.; depth of large calices 8–15 millim. Locality, Mergui Archipelago.

Subgenus CÆNOPSAMMIA, (gen.) *Ed. & H., Dunc. Revis.* p. 178.

DENDROPHYLLIA (CÆNOPSAMMIA) AFFINIS, sp. nov. (Plate I. figs. 29, 30.)

The colony is low, more or less hemispherical, and encrusts. Corallites project slightly above the lax, highly porous cœnenchyma. Calices circular in outline, as deep as they are broad. Septa with three cycles, often incomplete, and rarely an order of the fourth; primaries are a little exsert, imperforate except near the wall, slightly granular, and larger than the secondaries; both join the columella. The smaller tertiaries may bend towards and join the secondaries, but the opposite condition is quite as frequent, and the Eupsammine condition is often not seen. Columella deeply seated, small, and composed of two or three trabeculæ, or larger and of many trabeculæ. Costæ

granular, numerous, equal, distinct down to the cœnenchyma. Intercostal spaces large and highly perforate. Cœnenchyma finely spinulose and more or less perforated. There is an epitheca at the edge of the base of the coral, and it is dense.

Height of corallites above the cœnenchyma 2–4 millim.; breadth of the calices 5–7 millim. Gemmation occurs from the corallite-walls. Locality, Mergui Archipelago.

In some calices of *Cœnopsammia affinis* the third cycle is complete and its septa are long and reach the columella in most half-systems; but occasionally there is an attempt as it were to bend towards the secondary, and there may be the rudiments of a fourth cycle. In another calice as large as the last the primaries are the only well-developed septa; and in some systems the secondaries are small, bent, and cribriform, and unite with the columella low down, and then there are just vestiges of rudimentary tertiaries. The columella in this calice is not one quarter the size of that of the other.

Genus *ASTROPSAMMIA*, *Verrill*.

ASTROPSAMMIA PEDERSONI.

Astropsammia Pedersonii, *Verrill, Proc. Boston Soc. of Nat. Hist.* vol. xii. p. 392, 1869.

Locality, Mergui Archipelago.

Family *MADREPORIDÆ* (*pars*), *Ed. & H.*

Genus *MADREPORA*, *Linn.*

MADREPORA GRACILIS.

Madrepora gracilis, *Ed. & H. Hist. Nat. des Corall.* iii. p. 147, 1860.

Locality, Sullivan Island.

MADREPORA VALIDA.

Madrepora valida, *Dana, op. cit.* p. 461.

Locality, Elphinstone Island.

MADREPORA SURCULOSA.

Madrepora surculosa, *Dana, op. cit.* p. 445, pl. 32. fig. 4.

Locality, Owen Island.

MADREPORA HEBES.

Madrepora hebes, *Dana, op. cit.* p. 468, pl. 35. fig. 5.

Locality, Sullivan Island.

MADREPORA PYRAMIDALIS.

Madrepora pyramidalis, *Klunz. op. cit.* pt. ii. p. 12, Taf. i. fig. 2, Taf. iv. fig. 6, Taf. ix. fig. 7.

Locality, Sullivan Island.

MADREPORA PAXILLIGERA.

Madrepora paxilligera, *Dana, op. cit.* v. p. 452, pl. 34. fig. 1.

Locality, Owen Island and Sullivan Island.

MADREPORA CRIBRIPORA.

Madrepora cribripora, *Dana, op. cit.* p. 470, pl. 31. figs. 1, 1 a, 1 b.

Locality, Elphinstone Island.

MADREPORA SPICIFERA.

Madrepora spicifera, *Dana, op. cit.* p. 442, pl. 33. figs. 4, 4 a, 4 b, 5, et pl. 31. fig. 6, a, b, c.

Locality, Sullivan Island.

Genus TURBINARIA, *Oken*.

TURBINARIA CINERASCENS.

Madrepora cinerascens, *Ellis & Solander, op. cit.* p. 157, pl. 43.

Turbinaria cinerascens, *Oken, Lehrb. der Naturgesch. Zool. t. i. p. 67.*

Locality, King Island Bay.

TURBINARIA CRATER.

Madrepora crater, *Pallas, Elench. Zooph.* p. 332.

Turbinaria crater, *Oken, Lehrb. der Naturgesch. Zool. t. i. p. 67.*

Locality, King Island Bay.

Family PORITIDÆ, *Ed. & H.*Genus PORITES, *Ed. & H.*

PORITES CONGLOMERATA.

Porites conglomerata, *Quoy & Gaim. Voy. de l'Astrol. Zooph.* p. 429, 1833. A variety.

Locality, Elphinstone Island.

PORITES NODIFERA.

Porites nodifera, *Klunz. op. cit.* pt. ii. p. 41, Taf. iv. fig. 13, Taf. v. fig. 17.

Locality, King Island Bay.

PORITES EXCAVATA.

Porites excavata, *Verrill, Trans. Connect. Acad.* vol. i. part 1, p. 504, 1866.

Locality, King Island Bay.

Genus SYNARÆA, *Verrill*.

SYNARÆA LUTEA.

Synaræa lutea, *Verrill, Bull. Mus. Comp. Zoöl. Harvard*, 1869; *Klunz. op. cit.* pt. ii. p. 49, Taf. v. fig. 29, Taf. vii. fig. 4.

Locality, Elphinstone Island.

Genus GONIOPORA.

GONIOPORA COLUMNA.

Goniopora columna, *Dana, op. cit.* p. 469, pl. 56. fig. 5, 1846.

Locality, King Island Bay.

GONIOPORA LOBATA.

Goniopora lobata, *Ed. & H. Monogr. des Poritides*, p. 40.

Locality, Mergui Archipelago.

The indeterminable species were either dead corals forming the bases of encrusting species, or fragments. A *Fungia* remains to be described.

Remarks on the Species.

The *Paracyathi* have all a high septal number and low, broad subequal granular costæ, and with one exception, *P. cæruleus*, they have deeply seated small columellæ. Most of them are large forms, and the specific characters are given by the septa and pali. Some small specimens which are on the blocks of stone with the types show that the septal number is attained very early.

The species are allied to the Chinese forms and to such species as *P. caltha*, *Verrill*, from the west coast of North America. They have but slight affinity with Mediterranean species.

It is interesting to find that in two of the species the septa, pali, and columella are of a blue colour, which has withstood the effects of alcohol, eau de Javelle, and chloride of lime. Other species are brown in part, whilst one beautiful form is of the usual brilliant white colour. All the *Paracyathi* are new to science.

I have already described a species of *Polycyathus* from the Persian Gulf (*Proc. Zool. Soc.* 1876, p. 433), and two have now come before me from Mergui. About one which is well characterized, *P. Verrilli*, there is no doubt, and the wandering of the

costæ over the common basal structure is very well shown and so are the pali. A single corallite has a great resemblance to *Astrangia palifera*, Verrill, from Ceylon, but the Mergui form is not an *Astrangia*. The smallness of the pali in *Polycyathus difficilis* and their resemblance to columellary papillæ may mislead, but in some of the corallites the existence of pali and the absence of endotheca are as apparent as is the presence of costæ reaching down to and upon the intermediate basal structure.

Pocillopora is represented by two species, one of which is also found in the Red Sea, whilst the other has a Sandwich-Island habitat.

Of the genus *Mussa* two of the species in the collection are Red-Sea forms, and the third, *M. flexuosa*, Ed. & H., obtains a known habitat for the first time. They are all fine forms.

Euphyllia striata and *E. plicata* now receive known habitats; and *E. rugosa* is also from Fiji.

The species of *Symphyllia* are common to the Red Sea and the islands of the Pacific; and the solitary species of *Hydnophora* is also found in the seas of the great islands to the east.

The four species of *Mæandrina*, subgenus *Cæloria*, show the intermediate character of the Mergui fauna, for some are known in the Red Sea and others are members of the Chinese and Pacific faunas.

The genus *Brachymæandrina* was founded to receive a form well known in the Red Sea, and there are specimens from Mergui.

The six species of *Favia* are known in the coral-faunas of the Red Sea and the Seychelles. *Goniastræa* is a genus which has also species in the Red Sea, Ceylon, Seychelles, and in the Pacific reefs. The Mergui forms are large as a rule. One, *G. Bournoni*, Ed. & H., has a habitat given to it for the first time. *Goniastræa incrustans* is a new species, and it shows how necessary it is to study the variations of every part of a colony in order to diagnose a species properly. It is evident, after an examination of the whole of the specimen which is the type, that were it broken up and fossilized two or three species and a new genus might be made out of it. The interesting point is the absence of the large crown of pali in some few corallites and the thickness of the fused wall of others, some resembling species of *Favia*.

Mr. Quelch, late of the British Museum, has given me his efficient help in comparing some of the *Phymastræa* from Mergui

with the types in the British Museum, and there is no doubt that *Phymastræa irregularis*, Dunc., which I described in the Proc. Zool. Soc. 1883, p. 406, is a Mergui form. *P. aspera*, Quelch, which will shortly appear described in the 'Challenger' Report on the Reef Corals (p. 105), is also a Mergui form. Its first discovery was at Banda.

The Solenastræan subgenus *Quelchia* has occasional fissiparous calices, and is a characteristic form from Mergui. *Plesiastræa indurata*, Verrill, was described by Verrill from the Loo Choo Islands (Proc. Essex Institute, ser. 2, vol. v. 1867, p. 35, pl. 2. fig. 7).

The *Balanophyllia* is a well-marked species, and the row or crown-like series of swollen tertiaries resembles one consisting of pali. The small and young forms show this peculiarity also, and their septal number is of course lower.

The *Dendrophyllia* is a common form at Mergui, and, as the specific name implies, the colony is stunted, and resembles a bunch of compressed buds without a definite stem. It is a very exceptional species of a very variably shaped group. The subgenus *Cænopsammia* is represented by an interesting species, and it is not without its affinity with *C. coccinea*; but the small and variably shaped columella and the septal number constitute, besides the colour, specific distinctions. The variability of the corallites in the small colonies of this species is very suggestive.

Verrill's species *Astropsammia Pedersoni*, which was first found in the Panamanian province of W. America, occurs at Mergui, and there is no doubt that the distant localities have their simple corals closely allied and some of the colonial also.

The collection of species of *Madrepora* is very considerable, and their variability, owing to the conditions under which the forms grew, has given much trouble in classification. The only form about which I have some doubt I have classified under *M. gracilis*, Ed. & H. The description given in Hist. Nat. des Corall. vol. iii. p. 147, is conveyed in two lines and with a reference to another species. The large tubulo-nariform calices are very characteristic of the Mergui form. A species, *M. cribripora*, also with nariform calices, is stunted, and shows some evidence of having had the same occasionally slightly saline water to live in as is the case where the type of Dana was obtained in Fiji. Some of the species found at Mergui have a Red-Sea habitat, and others belong to the Pacific fauna.

The genus *Porites* flourishes at Mergui, and there is a large

form with twenty-four septa which I believe is Verrill's *P. excavata* from the Pearl Islands, Panama Bay. The only distinction is that the type has deeper calices. *Synaræa* of Verrill is also represented.

Fifteen species of the section Madreporaria Fungida occur at Mergui, but there is nothing particular to be said about them; they are well-known forms which also live in the Red Sea, Indian Ocean, Chinese seas, and on the Pacific reefs.

As a coral-fauna that of Mergui has rather more than one sixth of the species characteristic, and they are humble and for the most part simple species (solitary). The remaining species are also found from the Mozambique coast to China, as well as in western Central American seas and in the reefs of the Pacific Islands. The Australian, Mediterranean, and Atlantic coral-faunas are not represented by species at Mergui.

It is very remarkable that the coral-fauna of Ceylon, so far as it is known from Mr. Stuart O. Ridley's researches (*Ann. & Mag. Nat. Hist.* ser. 5, vol. xi. 1883, p. 250), does not contain a single Mergui species. The number of genera common to the two areas is, however, great, and many species are very closely allied.

Some great groups of Madreporaria are absent at Mergui, such as the non-paliferous Turbinolidæ, and the whole of the Oculinidæ except *Pocillopora*.

On turning to the descriptions of the Tertiary Madreporaria of the Asiatic province, and especially to the collections which were so carefully collected by the Geological Survey of India from Sind, which belong to the remains of a flourishing coral sea of Miocene age, one cannot but be impressed with the total distinctness of the ancient and modern faunas. There are no species, and few genera, in common (*Pal. Ind.* ser. xiv.). Unfortunately Pliocene fossiliferous deposits are rare in that part of the world, but it is to be hoped that search will be made for those which may be coralliferous so as to enable palæontologists to give the succession of forms in India from the Jurassic to the present day.

DESCRIPTION OF PLATE I.

- Figs. 1-3. *Paracyathus Andersoni*. 1, side view, nat. size; 2, a system of septa and pali, magnified; 3, costæ, magnified.
- 4-6. *P. profundus*. 4, side view, nat. size; 5, a half-system of septa and pali, magnified; 6, costæ, magnified.
- 7-9. *P. indicus*. 7, side view, nat. size; 8, a system of septa and pali, magnified; 9, costæ, magnified.
- 10, 11. *P. caruleus*. 10, side view, nat. size; 11, a half-system of septa and pali, magnified.
- 12-14. *P. merguensis*. 12, side view, nat. size; 13, a half-system of septa and pali, magnified; 14, costæ, magnified.
- 15, 16. *Polycyathus Verrilli*. 15, part of a colony, nat. size; 16, a corallite, magnified. The pali are the outer knobs of the axial space.
- 17, 18. *P. difficilis*. 17, part of a colony, nat. size; 18, a corallite, magnified.
- 19, 20. *Goniastræa incrustans*. 19, part of a colony, nat. size; 20, a calice, magnified.
- 21, 22. *Solenastræa (Quelchia) spongiformis*. 21, the colony, nat. size; 22, calices, magnified.
- 23, 24. *Leptastræa humilis*. 23, calices, nat. size; 24, a calice, magnified.
- 25, 26. *Balanophyllia merguensis*. 25, coral, nat. size; 26, part of a calice, magnified.
- 27, 28. *Dendrophyllia coarctata*. 27, colony, nat. size; 28, part of a calice, magnified.
- 29, 30. *D. (Cænopsammia) affinis*. 29, the colony, nat. size; 30, a calice, magnified.

On the Holothurians of the Mergui Archipelago collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson, Superintendent of the Museum. By Professor F. JEFFREY BELL, M.A., Sec. R.M.S. (Communicated by Dr. JOHN ANDERSON, F.R.S., F.L.S.)

[Read 3rd June, 1886.]

(PLATE II.)

THE collection of Holothurians made by Dr. John Anderson, though small, offers some points of interest, for it contains an unexpectedly large number of undescribed species, of species known to me before from one locality only, or forms that have as yet been seen only by those who described them.

The recent publication of Dr. Kurt Lampert's comprehensive monograph on the Holothuroidea * renders it unnecessary for me

* Reisen &c. von Dr. C. Semper. II. iv. Die Seewalzen, von Dr. Kurt Lampert: Wiesbaden, 1885.



P. M. Duncan, del.

MADREPORARIA FROM MERGUI.

A. S. Fernald del et lith.

Museum Bronn imp.